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A revision of the living Mactridae (Bivalvia: Autobranchia) from Northern Argentina and Uruguay

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Abstract: Living bivalves of the family Mactridae from Northern Argentina and Uruguay are herein revised. A bibliographical research yielded 22 nominal species reported from this area. Material from several institutions as well as fieldwork from La Paloma, Uruguay to San Blas, Argentina was studied. In addition, all type material were illustrated and redescribed. Descriptions of the soft and hard parts including ultrastructure of the shell, hinge and ligament using the Scanning electronic microscope (SEM) were carried out. We consider *Mactra guidoi* Signorelli and Scarabino, 2010, *Mactra isabelleana* d´Orbigny, 1846, *Mactra marplatensis* Doello-Jurado, 1949, *Mactra petitii* d´Orbigny, 1846, *Mactrella janeiroensis* (Smith, 1915), *Raeta plicatella* (Lamarck, 1818) and *Darina solenoides* (King, 1832) as valid species. In addition, a list of synonyms as well as the corroborated distribution is proposed for each species.

Key words: Southwestern Atlantic, *Mactra*, *Darina*, *Raeta*, *Mactrella*

The family Mactridae includes five subfamilies: Mactrinae Lamarck, 1809; Lutrariinae Gray, 1853; Kymatoxinae Stenzel *et al.*, 1957; Darininae Signorelli in Carter *et al.* 2011 and Tanysiphoninae Scarlato and Starobogatov, 1971. The latter group, described as a family, was recently considered as a subfamily of Mactridae (Bieler *et al.* 2010). Only Mactrinae, Kymatoxinae, and Darininae are represented in the Southwestern Atlantic. The subfamily Zenatinae Dall, 1895 was synonymized by Beu (2006) with Lutrariinae.

The most conspicuous morphological character that defines the mactrids is the inverted V-shaped cardinal tooth in the left valve, formed by two single cardinal teeth. In addition, the right valve's cardinal teeth are not fused and the anterior and posterior lateral teeth have, in general, only one cusp. The hinge formula of mactrids follows the nomenclature of Bernard and Munier Chalmas (Cox in Moore, 1969). In order to quantify the morphological variation of the group several authors studied different anatomical characters like ctenidia morphology, labial palps fusion, siphons, stomach and ultrastructure (i.e. Atkins 1937, Yonge 1948, Purchon 1960, Stasek 1963, Taylor 1973). Other authors have contributed to the knowledge of this group by describing and discussing many species worldwide, including South America (Dall 1894, 1897, 1901, Deshayes 1853, 1854, 1855, Philippi 1845, 1893, Reeve 1854, Smith 1881, 1905, 1914, 1915, among others).

A literature search yielded 22 available species names that were proposed from Southwestern Atlantic waters (Carcelles and Williamson 1951, Castellanos 1970, Rios 1994, 2009). The type specimens of those species were mainly deposited in European institutions. In the first half of the 20th Century, Lamy (1913, 1914, 1917, and 1925) studied the living species described by Lamarck in the collection at the Museum national d´Histoire naturelle, Paris. Later, Carcelles (1944) collated the first catalogue of the mollusks found in Puerto Quequén, Buenos Aires province, including six species of Mactridae. Some decades later Castellanos (1970), in a catalogue of mollusks from the Buenos Aires coast, added *Mactra petitii* d'Orbigny, 1846 in 1834–1847.

This work is part of an ongoing revision of the Southwestern Atlantic mactrids living in the Brazilian, Argentine and Magellan zoological provinces.

MATERIALS AND METHODS

Specimens were collected from La Paloma and Montevideo, in Uruguay; Rio de la Plata estuary, San Clemente del Tuyú, Mar Chiquita, Mar del Plata, Miramar, Puerto Quequén, San Blas and the mouth of the Rio Negro river area, in Argentina (Fig. 1). The material was collected, using a shrimp trawl of 2.5 cm pore diameter, in the subtidal zone. All living samples were fixed in 10% formalin and then transferred to 70% ethanol. The specimens were dissected and observed with a stereomicroscope. Digital photographs of the shells were made with a Nikon D100 and a micro lens Nikkor 60 mm. The hinge was described with the method developed by Bernard and Munier Chalmas (according to Cox in Moore, 1969) where

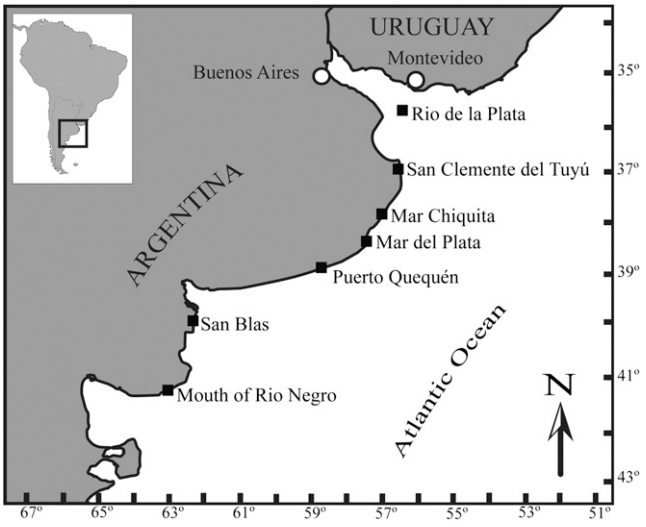

Figure 1. Map of the study area showing the sampled localities.

Arabic numbers are used to designate the cardinal teeth and roman numbers for the laterals. This method shows that all teeth in a right valve have odd numbers and all teeth in a left valve even numbers. The ultrastructure of the valves was analyzed in radial section. Siphons, ctenidia and labial palps were critical-point dried and then observed with a scanning electronic microscope (SEM) Phillips XL 30. The suprageneric classification used here follows Carter *et al.* (2011). The complete diagnosis of each valid species is summarized in the Table 1.

Type material of all nominal species and additional specimens from the following institutions were studied: Museo de la Plata (MLP); Museo Argentino de Ciencias Naturales "Bernardino Rivadavia" (MACN-In), Buenos Aires; Museu Oceanográfico "Prof. E. C. Rios" (FURG), Rio Grande; Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo; Museu Nacional, Universidade Federal do Rio de Janeiro (MNRJ), Rio de Janeiro; Museo Nacional de Historia Natural y Antropología (MNHNM), Montevideo; Museo Nacional de Historia Natural (MNHNC), Santiago; Academy of Natural Sciences, Philadelphia (ANSP); American Museum of Natural History (AMNH), New York; United States National Museum, Smithsonian Institution (USNM), Washington D.C.; Natural History Museum, London (NHMUK); Museum national d´Histoire naturelle (MNHN), Paris; Rijksmuseum van Natuurlijke Histoire (RMNH), Leiden; Zoologisk Museum (ZMUC), Copenhague, and Museum für Naturkunde (ZMB), Berlin.

RESULTS

SYSTEMATICS

Class Bivalvia Linnaeus, 1758
Subclass Autobranchia Grobben, 1894
Order Cardiida Férussac, 1822 in 1821–1822
Superfamily Mactroidea Lamarck, 1809
Family Mactridae Lamarck, 1809.

Genus *Mactra* Linnaeus, 1767

Trigonella Da Costa, 1778: 196 (objective synonym, by subsequent designation Winckworth, 1926: 106).
Deikea Mayer, 1872: 498 (type species, *Mactra gallensis* Mayer, 1867: 43; by subsequent designation Keen, 1969: 595).
Colorimactra Iredale, 1929: 268 (type species, *Mactra queenslandica* E. A. Smith, 1914: 148; by original designation).
Telemactra Iredale, 1929: 268 (type species, *Mactra obesa* Deshayes in Reeve, 1854: pl. 5, species 19; by original designation).

Type species:

Cardium stultorum Linnaeus, 1758: 681, by subsequent designation, Fleming 1818: 309.

Diagnosis:

Shell trigonal to oval, subequilateral, inflated; lunule and escutcheon well developed. External ligament separated from internal ligament by a shelly ridge. Pallial sinus shallow to deep and oval; lateral teeth elongated, similar in shape and size.

Distribution:

Atlantic coast of the American continent, Mediterranean Sea, United Kingdom coast, Atlantic and Indian coast of Africa, and coast of Australia and New Zealand.

***Mactra guidoi* Signorelli and Scarabino, 2010**
(Figs. 2A–C)

This species was recently described. It is here illustrated with the only purpose to keep together the species of the same geographic area.

Distribution:

From Guarapari, Espírito Santo in Brazil to Valdés Peninsula in Argentina (Signorelli and Scarabino, 2010).

Remarks:

Mactra guidoi was confused for many years by authors with *Mactra patagonica* d´Orbigny, 1846(Figs. 2D–F) which was collected by d'Orbigny from Quaternary deposits in Río Negro province. The material deposited in the NHMUK clearly differs from the specimens of *Mactra guidoi* (Figs. 2A–C). Aguirre (1994) cited this divergence and maintained unresolved the nomenclatorial issue. Finally, after dealing with this misunderstanding back to Ihering (1907), a complete

Table 1. Comparative diagnostic characters of valid species living in Northern Argentina and Uruguay.

Species	*Mactra guidoi*	*Mactra isabelleana*	*Mactra marplatensis*	*Mactra petitii*	*Mactrella janeiroensis*	*Raeta plicatella*	*Darina solenoides*
Shell morphology	Oval, elongated, ventral edge sinuous	Trigonal, inflated escutcheon not defined	Oval, elongated, escutcheon well defined	Oval, fragile, porcelanous	Subtrigonal, fragile, escutcheon defined by a shelly line	Trigonal to ovoid, fragile, white, pellucid	Elliptical, fragile, thin, inequilateral, laterally compressed
maximum size (length) recorded	45 mm	65 mm	40 mm	45 mm	55 mm	75 mm	74 mm
Pallial sinus	Rounded and shallow, V-shaped	shallow, V shaped	Short	Shallow and high, U-shaped	Deep, U-shaped	Deep and high, U-shaped	Deep U-shaped
Hinge plate	Smooth lateral teeth	Short lateral teeth	Lateral teeth different in length	Lateral teeth fragile, resilifer poorly developed	Ventral lateral teeth stronger than dorsal ones	Concentrated in cardinal area, laterals rudimentary	Weak lateral teeth very close to cardinals
Posterior gap	Absent	Absent	Absent	Absent	Small posterior gap	Posterior gap	Anterior and posterior gap
External surface	Smooth	Smooth	Smooth	Smooth	Concentric ridges in the umbonal area	With concentric wrinkles	Smooth

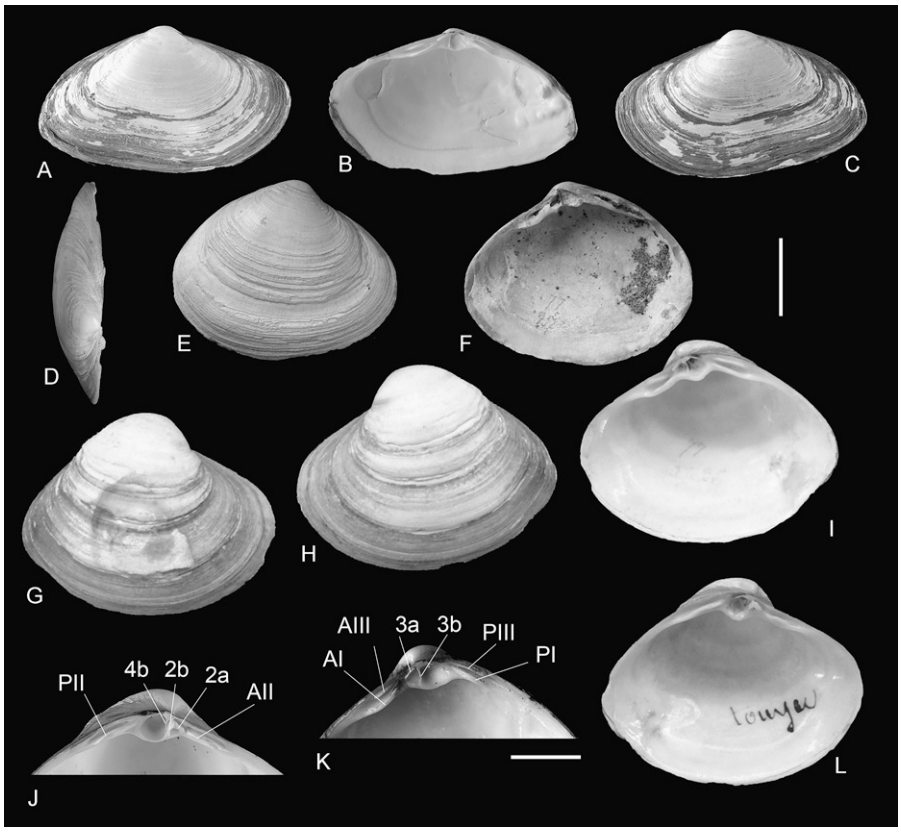

Figure 2. A–C, *Mactra guidoi*, Holotype MNHNM 15526; **A–B**, right valve, external and internal view; **C**, left valve, external view; **D–F**, *Mactra patagonica* Holotype NHMUK 1854.12.4.668; **D**, left valve, dorsal view; **E–F**, right valve, external and internal view; **G–L**, *Mactra isabelleana*; **G–J**, Lectotype NHMUK 1854.12.4.667/1, scale bar =1 cm; **K–L**, hinge detail of cardinal and lateral dentition, scale bar =1 cm. Arabic numbers are used to designate cardinal teeth and Roman numbers lateral teeth (Cox in Moore 1969).

revision of material of *Mactra patagonica* and *Mactra guidoi* from several institutions allowed us to establish that the first one was only recorded as a fossil form from Quaternary deposits and the second as recent shells from Buenos Aires and Uruguay (Signorelli and Scarabino, 2010).

Mactra isabelleana d'Orbigny, 1846
(Figs. 2G–L, 3A–J)

Mactra isabelleana d'Orbigny, 1846 in 1834–1847: 509, pl. 77, figs. 25–26. Weinkauff, 1884: 115; Smith, 1885: 58; Lamy, 1917: 194. Carcelles, 1944: 283, pl. 10, fig. 84; Barattini and Ureta 1961: 168, pl. 44, figs. a–b; Figueiras, 1961: 17; Parodiz, 1962: 36, 42–160; Richard and Craig, 1963: 137, pl. 2, figs. 7–8; Rios, 1966: 33; 1970: 194, pl. 57; 1975: 235, pl.74, fig. 1125; 1985: 242, pl. 86, fig. 1207; 1994: 265, pl. 90 fig. 1289; 2009: 535, fig. 1484; Cauquoin, 1967: 223; Figueiras and Sicardi, 1969: 365, pl. 4, fig. 53; Castellanos, 1970: 237, pl. 21, figs. 9–10; Closs and Forti Esteves, 1971: 32, pl. 3, figs. 7 a–b; Scarabino, 1977: 210, pl. 9, fig. 5; Forti Esteves, 1984: figs. 10 a–b; Aguirre, 1989: 169; 1991, 165; 1992: 39; 1994: 138, pl. 1, figs. 1–9, pl. 2, fig. 1–17; Scarabino, 2003: 245; Scarabino *et al.*, 2006: 157–169.

Trigonella isabellina d´Orbigny [sic]. Adams and Adams, 1853–1858: 376.

Mulinea isabelliana d´Orbigny [sic]. Conrad, 1868: 31.

Description:

Shell. Trigonal with irregular growth lines on the external surface, covered almost entirely by a yellow to brownish and dehiscent periostracum, anterior and posterior dorsal margins softly curved and descended to rounded ends; ventral margin also curved. Prosogyrous umbones present, not in contact. Rudimentary lunule and escutcheon not defined by shelly line. External ligament poorly developed, placed in a nymph oriented to the posterior side of the umbones. Internal ligament trigonal (Fig. 3C), located in a ventrally developed resilifer, both separated by a shelly ridge. Interior white; hinge with two anterior lateral teeth (AI and AIII) in the right valve; two not fused cardinal teeth (3a and 3b) placed dorsally to the resilifer and two posterior lateral teeth (PI and PIII); left valve with one anterior (AII) and one posterior (PII) lateral tooth; inverted V-shaped cardinal tooth composed by two single cardinals (2a and 2b), the 2b flanked by accessory lamella (4b) (Figs. 2K–L); left laterals with internal pustules well developed observed also in juveniles (Figs. 3H–I). External ligament poorly developed in juveniles (Fig. 3J). Ultrastructure of the shell with two layers, the inner with a cross-lamellar complex and the outer with simple cross lamellar structure (Figs. 3A–B). Juveniles with a protoconch very evident and a rudimentary hinge in both valves (Figs. 3D–G). Mantle cavity organs. Digestive system with mouth, short esophagus, stomach type V of Purchon (1960), connected to a long crystalline style on the posterior ventral margin, completely separated from the intestine and located into a sac (Fig. 4C), immersed in the digestive diverticula; intestine long, coiled and positioned surrounding the visceral mass; in the posterior

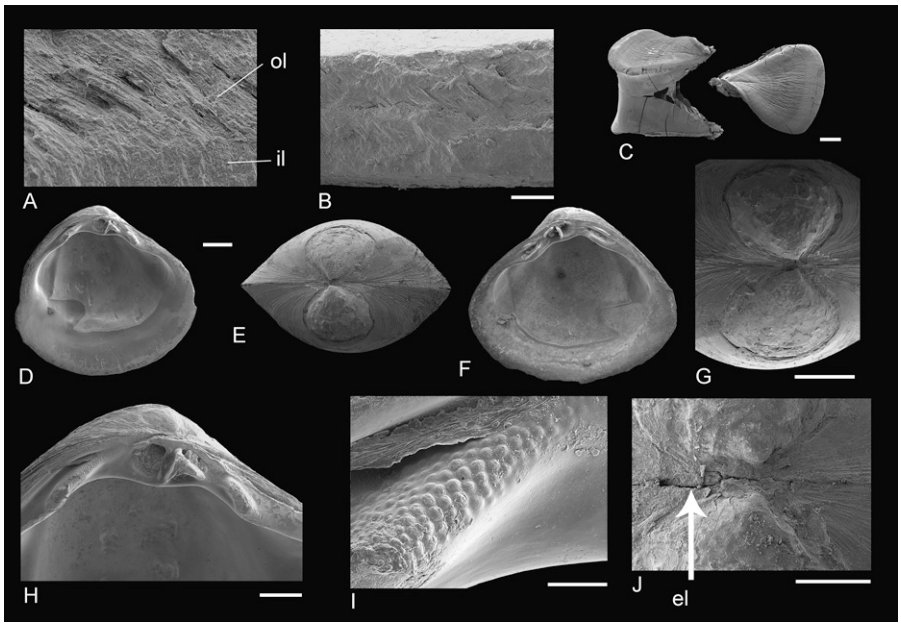

Figure 3. *Mactra isabelleana,* **A–B**, shell ultrastructure, scale bar 100 μm; **C**, SEM picture of external ligament, scale bar = 5 mm; **D–G**, SEM picture of juveniles showing the protoconch, scale bars, **D–F** = 2 mm, **G** = 1 mm; **H–I**, internal pustules present in lateral teeth, scale bar **H** = 500 μm, **I** = 20 μm; **J**, SEM picture of the rudimentary external ligament, scale bar = 100 μm. Abbreviations, **el**, external ligament; **il**, inner layer; **ol**, outer layer.

side of the body, intestine ascending to the pericardial cavity where it goes through the ventricle (Fig. 4D) and finally comes out through the anus, placed on the ventral side of the posterior adductor muscle in the base of the exhalant siphon. Siphons type C of Yonge (1948, 1957), completely fused with outer ring of sensory tentacles, but without categorization; both siphons distinguished, the exhalant smaller than the inhalant; mantle folds united with the periostracal groove (Figs. 4A–B). Ctenidia type C1 (Atkins 1937) fused in the posterior side of the body surrounding it laterally; each ctenidia formed by two demibranch. The inner demibranch with a food groove in the ventral margin. Labial palps trigonal, elongated with the inner surface plicated and the outer smooth, fused to the ctenidia with a type 3 of Stasek category (1963) (Fig. 4E).

Type Material:

Aguirre (1994) designated a lectotype (NHMUK 1854.12.4.667/1) and two paralectotypes (NHMUK 1854. 12.4.667/2, 3).

Type locality:

Montevideo, Uruguay. Additional specimens were sampled by Candé, A. Isabelle and by d'Orbigny themselves in the mouth of the Río de la Plata, Maldonado Bay in Uruguay and Cabo San Antonio, Argentina.

Other material examined: *Brazil*. Rio de Janeiro (RJ) (MZUSP 14678); Cabo Frio, RJ (MZUSP 80817); São Tomé, RJ (MUZSP 35091); São Paulo (SP) (FURG 32866; MNHNM 7350; MZUSP 22363, 34757); Iguape, SP (MZUSP 79653); São Sebastião, SP (MZUSP 81120); Matinhos, Paraná (PR) (MZUSP 22294); Santa Catarina (FURG 32807, 47886; MZUSP 77476, 40 m); Rio Grande do Sul (RS) (ANSP 225473, 249096; FURG 4353, 9860, 16901, 16994, 18914, 22239, 22390, 23074, 23458, 23684; MNRJ 1474, 8966; MZUSP 662, 16140, 45013); Albardão, RS (FURG 32353); Cassino, RS (AMNH 293596; FURG 1329, 5962, 7851, 11888, 40182, 43041; MZUSP 77475, 77477; NHMUK 1958-4-10-64). *Uruguay*. Chui (FURG 32673); Rocha (MNHNM 4584, 7354; USNM 335793, 359272); Cabo Polonio (USNM 359220); La Paloma (FURG 32576; MACN 15168, 15395, 15864, 17552; MNHNM 2400, 4282, 7339; MNRJ 1227; MZUSP 22366; USNM 362723); Flores (USNM 364200); Punta del Este (MNHNM 7334, 7346, 7353; NHMUK 1956-8-4-88-93); Maldonado (AMNH, 191876; ANSP 70491, 70497, 285624; MNHNM 2541, 3396, 7343, 7344; MZUSP 13058, 13059; USNM 151659, 180884, 180886, 343542); Piriápolis (FURG 8477); Montevideo (ANSP 312403, 350044; FURG 1591; MZUSP 8063,11559, 22364; USNM 122497, 331310, 331467, 334426, 347544, 355718, 359257, 363192, 363767, 380783; MACN 977, 6783-1, 8732, 9771-1, 11080, 29683; MLP 2367, 2461, 9387; MNHNM 2386, 2544, 4397, 7337, 7347, 7352; NHMUK 91-4-13-100, 4 valves with periostracum); Canelones (ANSP 221268, 314950; MNHNM 7342; MZUSP 22365; USNM 335794); Lobos (USNM 359258); Nueva Palmira (MACN 11351; USNM 331309). *Argentina*. Río de la Plata (USNM 96144, 424473); La Plata (MZUSP 13060, 13061); Punta Indio (MLP 3888); Mar del Plata (AMNH 191877; FURG 172; MACN 10306, 10772, 11580, 11964, 14152, 16578; USNM 346833); Miramar (NHMUK 1937-11-9-2); Necochea (MLP 3895); Puerto Quequén (MACN 14158); Bahía Blanca (MACN 6620-3); San Blas (MACN 20400); Río Negro (MLP 1859); San Antonio Oeste (FURG 17217).

Distribution:

From Cabo Frio, Rio de Janeiro state, Brazil to San Antonio Oeste, Río Negro province, Argentina.

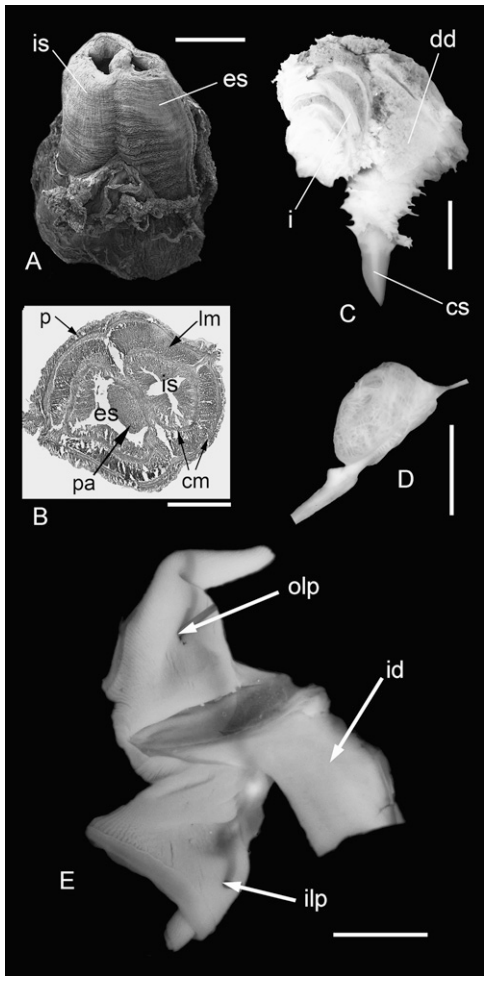

Figure 4. *Mactra isabelleana*, **A**, SEM picture of the siphons, scale bar = 1 mm; **B**, histological cross section of the siphons, scale bar = 500 μm; **C**, external view of digestive system, scale bar = 1cm; **D,** heart and hind gut, scale bar = 5 mm; **E**, inner demibranch associated to the labial palps, scale bar = 5 mm. Abbreviations, **cm**, circular muscle; **cs**, crystalline style; **dd**, digestive diverticula; **es**, exhalant siphon; **i** = intestine; **id**, inner demibranch; **ilp**, inner labial palp; **is**, inhalant siphon; **lm**, longitudinal muscle; **olp**, outer labial palp; **p**, periostracum; **pa**, papillae.

Remarks:

Mactra isabelleana is one of the dominant bivalves in muddy and sandy bottoms in the Río de la Plata estuary (Giberto *et al.* 2004). After a review of the quaternary species of *Mactra* from Buenos Aires Province Aguirre (1994) concluded that *Mactra isabelleana* is a "polytypic" species that includes the morphotypes *Mactra petitii* d'Orbigny, 1846 and *Mactra marplatensis* Doello-Jurado, 1949. However, after the analysis of the type material of the three nominal taxa, significant morphological differences were observed. Within this context, *Mactra isabelleana* is a valid species living in the Buenos Aires coast. It differs from *Mactra marplatensis* by the presence of a shell more trigonal and less elongated; a shorter pallial sinus, stronger hinge with lateral teeth shorter and mainly by a posterodorsal area not defined by a shelly ridge. *Mactra petitii*, a valid and common species from southern coast of Brazil, differs from *Mactra isabelleana* by the presence of a more fragile and less inflated shell. Other mactrids studied previously, such as *Mactra stultorum* (Linnaeus, 1758), *Spisula solidissima* (Dillwyn, 1817) and *S. polynyma* (Stimpson, 1860), present ctenidia with a type C (2) (Kellog, 1915).

Mactra marplatensis Doello-Jurado, 1949

(Figs. 5A–J)

Mactra marplatensis Carcelles, 1944, 283 (*nomen nudum*)
Mactra marplatensis Doello-Jurado, 1949: 4; Parodiz, 1962: 42–43; Rios, 1966: 33; 1970: 195; 1975: 235, pl.74, fig. 1126; 1985: 243, pl. 86, fig. 1208; 1994: 265, pl. 90, fig. 1290; Figueiras and Sicardi, 1969: 366, pl.4, fig. 55; Castellanos, 1970, 234, pl. 21, fig. 11–13.

Description:

Shell. Oval, elongated, equilateral, strong, with the external surface smooth covered by a brownish periostracum usually absent in the umbonal area; umbones subcentral and prosogyrous. Anterior end rounded ascending to the umbo straightly; ventral margin convex; posterior end with a more defined angle; escutcheon defined by a shelly ridge revealed by periostracal folds; lunule wide but poorly defined. Interior white, with a deep pallial sinus, U-shaped; adductor muscle scars similar and lenticular. Right hinge with two lateral teeth, different in length, being the AI more elongated than the AIII; resilifer small and rounded; posterior lateral teeth more elongated than the anterior, similar in size and shape; cardinal teeth not fused, with the anterior short but strong, oriented obliquely to the anterior side of the shell and the posterior more fragile and placed almost vertically. Left hinge with one anterior and one posterior lateral teeth similar in size and fragile; cardinal teeth fused making the typical inverted V-shaped tooth flanked by the accessory lamella (Figs. 5F–G). Internal ligament in a resilifer, separated from the external ligament by a fragile shelly ridge; external ligament rudimentary located behind the umbones in the dorsal area. Ultrastructure of the shell with same structure as the species previously analyzed (Figs. 5H–J).

Type Material:

Holotype (MACN-In 10307) articulated specimen with periostracum. Six paratypes (MACN-In 10307-1).

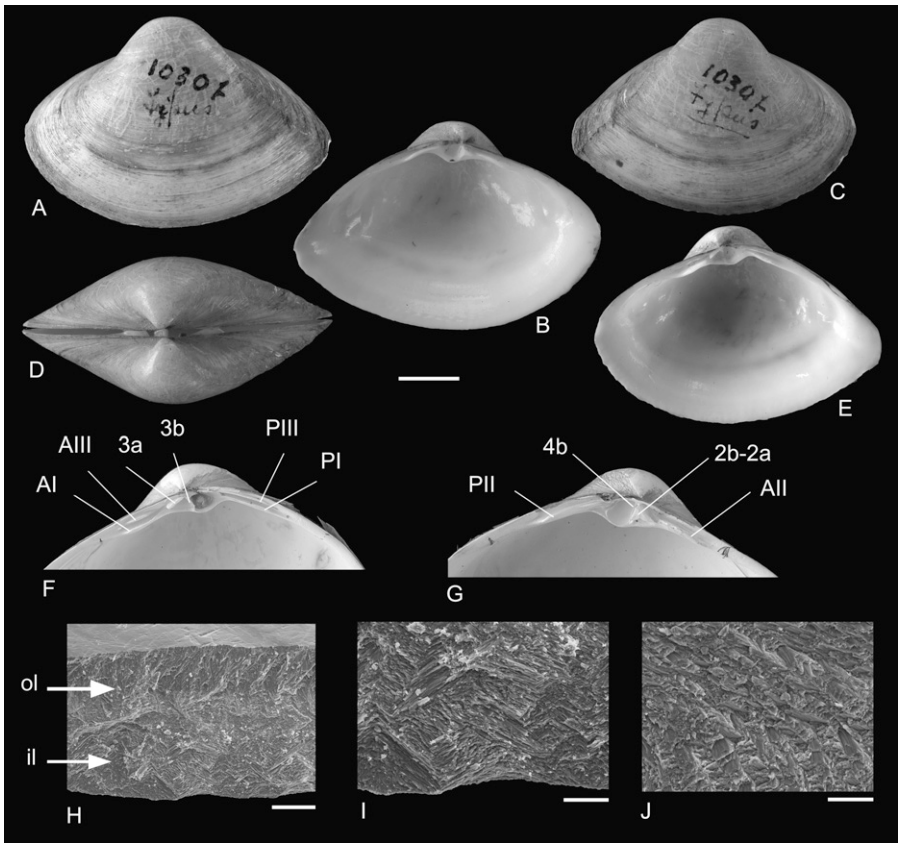

Figure 5. *Mactra marplatensis*, **A–E**, Holotype (MACN 10307), scale bar 1 cm; **F–G**, hinge detail, scale bar =1 cm; **H–J,** shell ultrastructure, **H**, SEM picture of radial cross section, scale bar 50 μm, **I**, detail of inner layer with CCL (complex cross-lamellar), **J**, detail of outer layer with CL (cross-lamellar) structure, scale bar = 20 μm. Abbreviations, **il**, inner layer; **ol**, outer layer. Arabic numbers are used to designate cardinal teeth and Roman numbers lateral teeth (Cox in Moore 1969).

Type Locality:

Mar del Plata, Argentina, in 30 m depth.

Other material examined:

Brazil. Recreio dos Bandeirantes, RJ (MNRJ 1473); Ilha Grande, RJ (MZUSP 22344); Rio de Janeiro (FURG 6602, 10165, 28175, 31903, 34398; MZUSP 22345, 22346, 44249); São Paulo (FURG 47019); São Sebastião, SP (FURG 43212); Ubatuba, SP (MZUSP 83652); Santa Catarina (FURG 42891); Cassino, RS (FURG 34355). *Uruguay*. Chui (MNHNM 8460); Playa del Barco, Rocha (MACN 14787); Fortaleza Santa Teresa, Rocha (MNHNM 8459); La Paloma (MNHNM 2387, 2408, 3117, 7336, 7351); Punta del Este (MNHNM 1088). *Argentina*. Río de la Plata estuary (MACN 23502, collected in 1938, 23 m, 4 valves); Mar Chiquita (MACN 21204); Mar del Plata (MACN 8812, 10307 (Holotype); MNHNM 7349); Miramar (MLP 1461); Puerto Quequén (MACN 13036).

Distribution:

From Rio de Janeiro, Brazil to Puerto Quequén, Buenos Aires province, Argentina.

Remarks:

Mactra marplatensis was first mentioned by Carcelles (1944) in a catalogue of marine mollusks from Puerto Quequén without a formal description, hence it is a *nomen nudum*. Its description was published posthumously by Doello-Jurado (1949).

Mactra petitii d'Orbigny, 1846

(Figs. 6A–G)

Mactra petitii d'Orbigny, 1846: 509, pl. 72, fig. 23–24; Martinez and Saez, 1869: 13, pl. 3, fig. 9; Ihering, 1907: 320; Lamy, 1917: 342; Cauquoin, 1967: 226; Castellanos, 1970, 234, pl. 21, fig. 4–6; Rios, 1970: 196, pl. 57; 1975: 236, pl. 75, fig. 1131; 1985: 243, pl. 86, fig. 1212; 1994: 265, pl. 90, fig. 1294; 2009: 536, fig. 1488; Altena 1971: 52; Aguirre, 1994: 141, pl. 1, figs. 5A–b.
Mactra symmetrica Deshayes in Reeve, 1854: pl. 16, fig. 84; Deshayes, 1854: 17; Dall, 1891: 44.
Trigonella petitii Conrad, 1868: 39.
Mactra scalpellum Dall, 1891: 44. (not Deshayes in Reeve, 1854).
Mactra richmondi Dall, 1894: 26.

Description:

Shell. trigonal to oval, inequilateral, elongate, maximum size up to 45 mm, relatively fragile; external surface mostly smooth; concentric ornamentation only present in the dorsal area at both sides of the umbones. Posterior end rounded; posterodorsal area or escutcheon well-defined from the umbones to the posterior end, ventral margin and anterior end rounded without sharp angles; small and poorly inflated umbones at ~middle of the shell length. Interior white with a short but high U-shaped pallial sinus. Hinge formula similar to *Mactra marplatensis*, but with the resilifer distinctly less ventrally developed; lateral teeth fragile and elongated, cardinal teeth symmetrically oriented in relation to the longitudinal axis, very close to the umbones (Fig. 6C); external ligament separated from internal ligament by a shelly ridge.

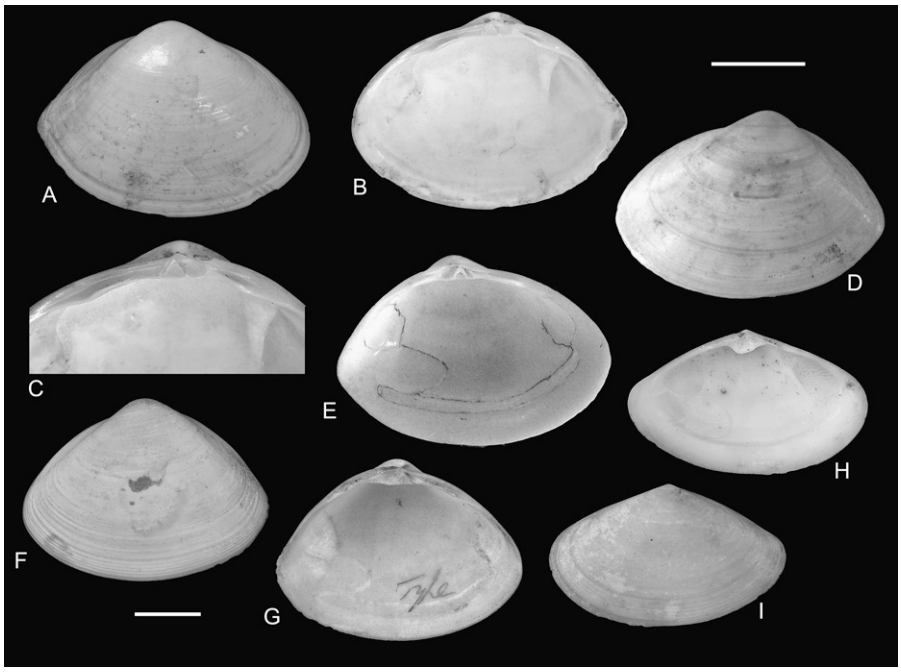

Figure 6. A–C, *Mactra petitii* Holotype NHMUK 1854-12-4-665; **D-E**, *Mactra richmondi* Holotype USNM 124774; **F–G**, *Mactra symmetrica* Holotype (NHMUK Cuming coll.); **H–I**: *Mactra scallpelum* Syntype (NHMUK unnumbered), scale bar = 1 cm.

Type Material:

[*Mactra petitii*] NHMUK 1854-12-4-665, holotype from Rio de Janeiro, Brazil; [*Mactra symmetrica*] NHMUK (unnumbered), holotype from Cuming collection, erroneously recorded from New Caledonia; [*Mactra richmondi*] USNM 124774, holotype collected in Greytown, Nicaragua.

Type Locality:

Rio de Janeiro, Brazil.

Other material examined:

Central America. Jamaica (AMNH 87614); Panama channel (AMNH 163694). *Brazil*. Rio Grande do Norte (ANSP 300090, 300476); Alagoas (AL) (FURG 11142, 29274); Caravelas, BA (MZUSP 22303); Espírito Santo (ES) (FURG 30430; MZUSP 15741); Guarapari, ES (MZUSP 15737, 22305, 22306, 22307, 22308); Vitória, ES (MZUSP 22304); Niterói, RJ (MNRJ 4081); Cabo Frio, RJ (USNM 426258); Flamengo, RJ (MZUSP 42752); Rio de Janeiro (AMNH 129246; FURG 8032, 16017, 28171, 46655; MNRJ 4579; MZUSP 19514, 21827, 22331, 55692; USNM 359314); Angra dos Reis, RJ (MZUSP 22315, 22329, 63182, 63239); Mangaratiba, RJ (MNRJ 1560); Ilha Grande, RJ (MNRJ 1476; MZUSP 22310, 22311, 22312, 22313, 22314, 22317, 22318, 22319, 22320, 22321, 22322, 22323, 22324, 22325, 22326, 22327, 22328, 22330; FURG 14258); Recreio dos Bandeirantes, RJ (MNRJ 1592, 2114); São Sebastião, SP (MZUSP 14178, 14246; MNHNM 2399); Santos, SP (FURG 11809, 43206, 43238; MNHNM 2389, 2399, 2402, 7348, 8669, 8698; MZUSP 22259, 22335, 22336, 22337, 22339, 78251); Ubatuba, SP (MZUSP 22260, 22332, 22333, 22334, 53953, 82477, 82536; MNHNM 2404); Barra de Guaratiba, RJ (MNRJ 1595); Matinhos, PR (MZUSP 22340); Barra do Sul, Santa Catarina (SC) (MZUSP 19374); Camboriú, SC (MZUSP 26347); Ilha de São Francisco, SC (MZUSP 13034); Santa Catarina (FURG 47741, 31679, MNRJ 376, MZUSP 22341); Albardão, RS (FURG 16906); Rio Grande do Sul (FURG 18044, 22902, 22970, 23042, 23058, 26785; MZUSP 70488). *Uruguay*. Rocha (MZUSP 660); Puerto La Paloma (MACN 29997); Maldonado (FURG 16214). *Argentina*. Necochea (MLP 9380); Monte Hermoso (MZUSP 13056).

Distribution:

From Jamaica to Monte Hermoso in Buenos Aires province, Argentina.

Remarks:

The type specimen of *Mactra petitii* (Figs. 6A–C) was collected by M. Cléry, and later sent to d'Orbigny by Petit de la Saussaye. *Mactra symmetrica* Deshayes in Reeve, 1854 and *Mactra richmondi* Dall, 1894 (Figs. 6D–G) are confirmed synonyms. The first one was erroneously described from New Caledonia, a colony of France, at that time. None of the catalogues on marine mollusks from Oceania (Smith 1914, Kershaw 1958, Lamprell and Whitehead 1990; Kilburn and Hylleberg 1998, Taylor and Glover 2004) mentioned *Mactra symmetrica. Mactra coquimbana* was illustrated by Philippi (1887) and proposed as a synonym of *Mactra petitii* by Ihering (1907). The illustration of *Mactra coquimbana* (Philippi, 1887: 244, pl. 30, fig. 2) from Neogene deposits from Coquimbo, Chile is rudimentary and does not allow confirmation of its taxonomic position. Finally, *Mactra scalpellum* Deshayes in Reeve, 1854 described from the New Zealand coast was erroneously mentioned by Dall (1891) for Brazil. The type material of this valid Indo-Pacific species (Figs. 6H–I) clearly differs from *Mactra petitii*.

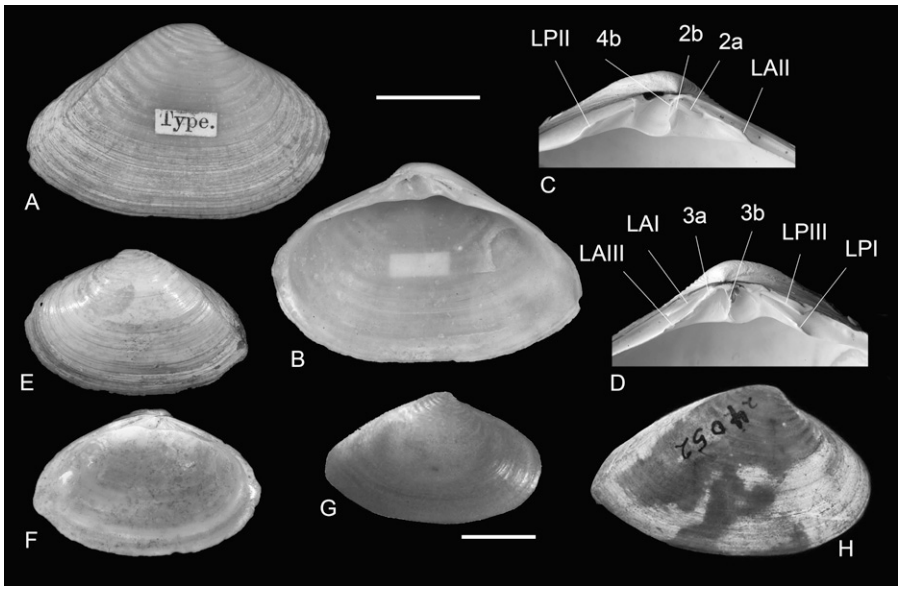

Figure 7. A–B, *Mactrella janeiroensis*, Syntype NHMUK 1915.4.18.489, scale bar 1 cm; **C–D**, *Mactrella janeiroensis*, hinge detail; **E–F**, *Mactra surinamensis* Holotype (RMNH unnumbered); **G**, original illustration of *Micromactra miskito* (Petuch, 1998); **H**, *Mactra californica maracaibensis* Holotype PRI 24052, scale bar = 1 cm. Arabic numbers are used to designate cardinal teeth and Roman numbers lateral teeth (Cox in Moore 1969).

Genus *Mactrella* Gray, 1853

Papyrina Mörch, 1853: 4, in part, objective synonym Keen, 1969: 598.

Micromactra Dall, 1894: 40 (type species, *Mactra californica* Conrad, 1837: 240; by monotypy).

Type species:

Mactra striatula Linnaeus, 1767: 1125; by monotypy.

Diagnosis:

Shell trigonal to oval, inequilateral, with concentric lines in the umbonal area; posterior end defined by shelly line weakly visible; hinge with anterior lateral teeth with two cusps.

Distribution:

Europe, Pacific coast of North America, western Atlantic from Caribbean Sea to Argentina.

***Mactrella janeiroensis* (E. A. Smith, 1915)**
new combination
(Figs. 7A–G, 8A–H)

Mactra (*Mactrinula*) *janeiroensis* E. A. Smith, 1915: 102, pl. 4, fig. 20.

Mactra janeiroensis E. A. Smith, 1915. Doello-Jurado in Carcelles, 1944: 284, pl. 10, fig. 83; Barattini and Ureta, 1961: 169; Figueiras, 1962: 62; Cauquoin, 1967: 224; Figueiras and Sicardi, 1969: 367, pl.4, fig. 56; Rios, 1969: 9; 1970: 195, pl. 57; 1975: 236, pl.75 fig. 1128; 1985: 243, pl. 86, fig. 1213; 1994: 266, pl. 91, fig. 1295; 2009: 536, fig. 1489; Castellanos, 1970: 236, pl. 21, figs. 7–8.

Mactra surinamensis Altena, 1968: 172, figs. 152; 1971: 52, fig. 18.

Mactra miskito Petuch, 1998: 40, fig. 12–13.

Description:

Shell. subtrigonal, elongated, thin, fragile, inequilateral, with concentric ornamentation weaker along the ventral margin; subequilateral, umbones prosogyrous and weakly inflated; anterior and posterior ends rounded, brownish periostracum eroded in umbonal area; lunule not defined by a shelly line but recognized; escutcheon well developed and limited by a line or a soft keel. Interior white and pellucid with a deep and U-shaped pallial sinus. Right hinge like mactrids discussed above, with two cardinal teeth (3a and 3b) not fused. Anterior lateral teeth of different sizes, the ventral one longer; two posterior lateral teeth (PI and PIII) similar in size; left valve with inverted V-shaped cardinal teeth (2a and 2b) flanked in the posterior side by the accessory lamella (4b); one anterior and one posterior lateral tooth complete the hinge (Figs. 7C–D). Resilifer well developed ventrally. Ultrastructure of the shell like other mactrids analyzed (Fig. 8H). Mantle cavity organs. siphons completely fused covered by the periostracum, inhalant with three sizes of tentacles in the apertural ring (Figs. 8B, D, E and G); Exhalant siphon with two rows of tentacles of uniform size (Fig. 8C); morphology of the ctenidia and labial palps similar to those of previous species (Fig. 8F).

Type material: [*Mactrella janeiroensis*] NHMUK Reg. 1915.4.18.489, 6 syntypes. The illustrated specimen in the original description had the following dimensions: Length: 31 mm, height: 20 mm, width: 12 mm; [*Mactra surinamensis*] RMNH (unnumbered), holotype from Suriname and four paratypes collected in Coppename, Suriname; [*Mactra miskito*] holotype (single right valve, CMNH 47364), length 30 mm, width 19 mm; 5 paratypes (single valves, CMNH 47352).

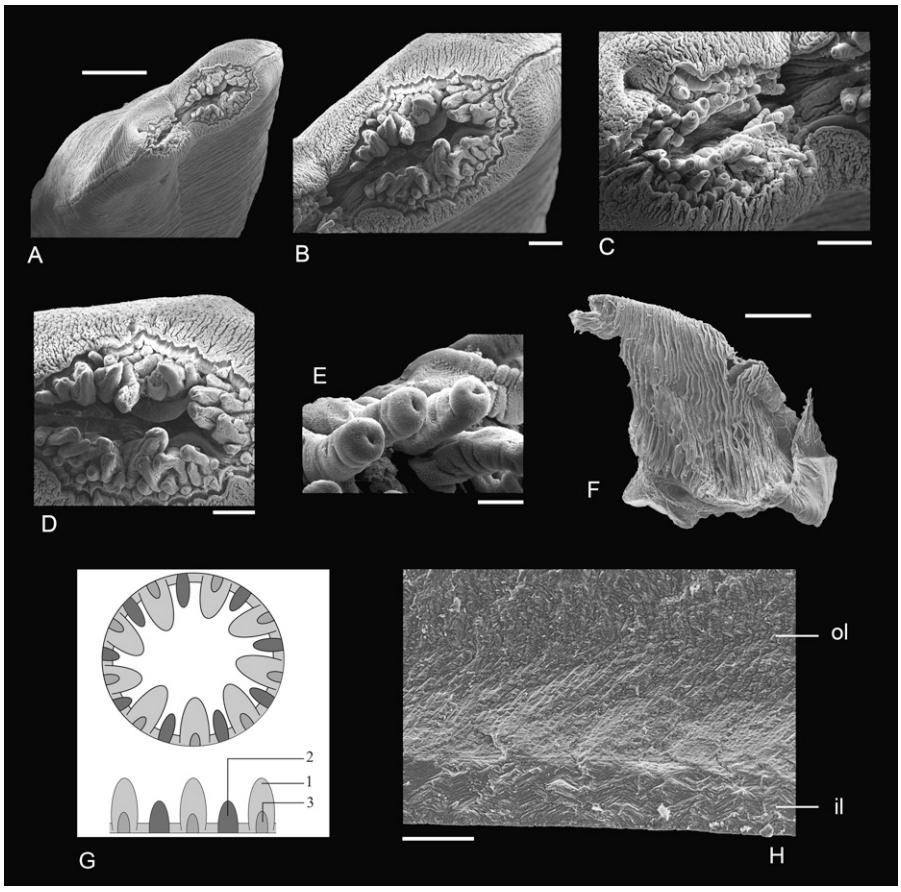

Figure 8. *Mactrella janeiroensis,* **A–E**, SEM picture of siphons; **A**, general aspect; **B**, inhalant siphon; **C**, exhalant siphon; **D**, tentacles of inhalant siphon; **E**; Detail of tentacles of inhalant siphon, scale bar = 200 μm for all figures except **E** = 20 μm; **F**, outer labial palp, scale bar = 1 mm; **G**, scheme of inhalant siphon with the three size of tentacles; **H**, shell ultrastructure, scale bar = 100 μm. Abbreviations, **il**, inner layer, **ol**, outer layer.

Type locality:

Rio de Janeiro, Brazil, collected in sandy bottoms at 73 m. depth (station 42 of "Terra Nova" Antarctic Expedition, May 1913).

Other material examined:

Venezuela. Venezuela (USNM 381914). *Brazil*. Maceió, AL (FURG 37524); Bahia (FURG 29337); Espírito Santo (FURG 1290); Guarapari, ES (FURG 15541); Rio de Janeiro (MNHNM 7370); Ilha Grande, RJ (MZUSP 22353, 22355); Cabo Frio, RJ (MZUSP 19373); São Paulo (FURG 12224, 43240, 46969, 47702; MNHNM 2406, 7995; MZUSP 13043, 82277); Ubatuba, SP (MZUSP 22348, 22349, 22350, 22351, 22395, 22396, 77960, 82479, 83137; MNHNM 8730); Santos, SP (MZUSP 22352, 44998, 45199, 45207); Bertioga, SP (MZUSP 79750); Cananéia, SP (MNHNM 2405; MZUSP 26169, 83451); Santa Catarina (MZUSP 15777, FURG 47724, 46847); Santa Catarina lagoon (MNHNM 3617); Porto Belo, SC (MZUSP 36318, FURG 42752); Rio Grande do Sul (FURG 13173, 14009, 21921, 22608, 22893); Albardão, RS (FURG 17006, 32927); Cassino, RS (FURG 49). *Uruguay*. Cabo Polonio (FURG 15154); La Paloma: (MNHNM 2403, 4410). *Argentina*. Mar del Plata (MACN 8809, 23376); Pinamar (85 km to east: MACN 24249, 23411); Quequén (MACN 2309); Gulf of San Matías (MLP 4124); Gulf of San José, Chubut (MACN 37944).

Distribution:

From Santa Rita, Venezuela to Villarino beach, San José Gulf, Argentina.

Remarks:

The placement of *Mactrella janeiroensis* into this genus is based on the similarities between *Mactra californica* Conrad, Genotype of *Micromactra*, and *Mactra striatula* Linnaeus, Genotype of *Mactrella*. The full description and comparison of the genotypes of *Mactrella*, *Micromactra*, *Mactrinula* and *Mactrellona*, is currently in process of publication. *Mactrella janeiroensis* and *Raeta plicatella* are the South American mactrids with largest distribution in the Western Atlantic. Both species occur from the Caribbean Sea to the North Patagonian gulfs in Argentina. The distribution differs from other mactrids (i.e. *Trinitasia iheringi* (Dall, 1897), *Mactrotoma fragilis* (Gmelin, 1791) and *Mactrellona alata* (Spengler, 1802) that never extend beyond Santa Catarina, Brazil. *Mactrella janeiroensis* has been usually cited in South American catalogues (Carcelles 1944, Barattini and Ureta 1961, Cauquoin 1967, Rios 1969, 1975, 1994, 2009, Figueiras and Sicardi 1969, Castellanos 1970). *Mactra* (*Micromactra*) *surinamensis* Altena, 1968 (Figs. 7E–F), described from the coast of Suriname, is a confirmed synonym. It is characterized by the diagnostic concentric ornamentation and the escutcheon; however the specimens described by Altena were broken. In the internal side of the shell, the hinge and the pallial sinus are equal to those observed in the types of *Mactrella janeiroensis*. Finally, other nominal species that must be considered as synonym is *Micromactra miskito* Petuch, 1998 (Fig. 7G) described from the coast of Nicaragua. The Miocene Venezuelan *Mactra* (*Mactrotoma*) *californica maracaibensis* Hodson and Hodson,

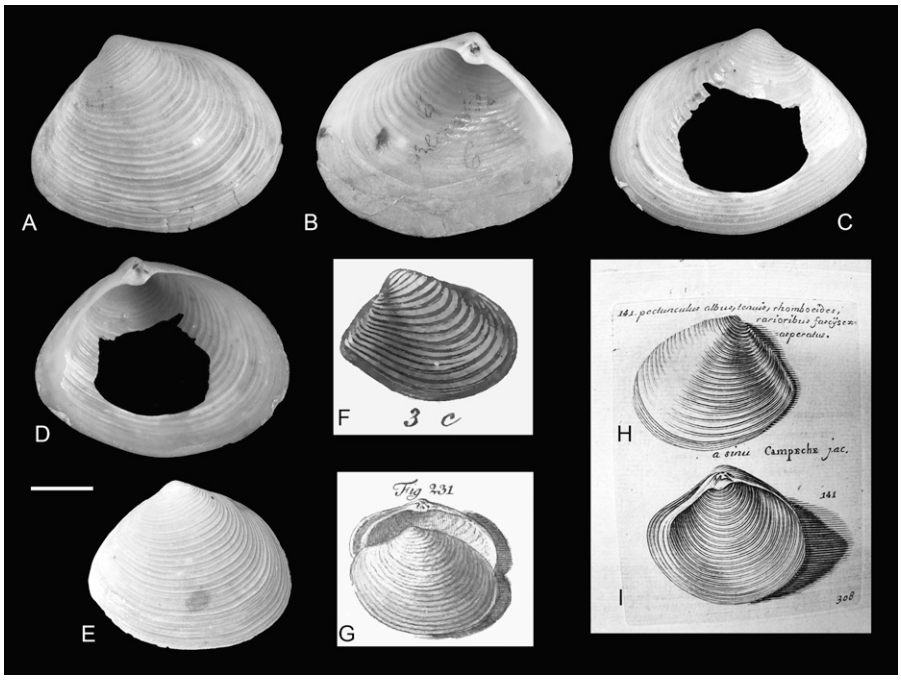

Figure 9. A–D, *Raeta plicatella*, Syntypes (MNHN); **E**, *Lavignon papyracea* d'Orbigny, 1846 (NHMUK 1854.12.4.686); **F**, *Mactra campechensis*, original illustration from Wood and Hanley (1828); **G**, *Mactra papyracea*, illustration from Chemnitz (1782); **H–I**, *Mactra campechensis* illustration from Lister (1770); scale bar = 1 cm.

1931 is similar to *Mactrella janeiroensis*. However, the shell morphology of the types of *maracaibensis* (Holotype PRI 24052 and Paratype PRI 24061 collected in the Miocene locality of Río Coquiza, about 2 km, north and 6 km East of Miranda, Venezuela) differs in the posterodorsal end, being more elongated, than that of the living one (Fig. 7H), and therefore, is not considered a valid species.

Subfamily Kymatoxinae Stenzel *et al.*, 1957.
Genus *Raeta* Gray, 1853.
Lovellia Mayer, 1867: 253 (objective synonym).

Type species:

Mactra campechensis Gray, 1825: 134 (= *Lutraria plicatella* Lamarck, 1818 in 1815–1822: 470, by monotypy).

Diagnosis:

Shell trigonal, fragile, pellucid, completely ornamented in the external surface by concentric wrinkles, compressed in the posterior area, anterior and posterior end rounded, lateral teeth rudimentary and close to the cardinals.

Distribution:

Europe, Pacific coast of Central and South America, Western Atlantic and Asia.

***Raeta plicatella* (Lamarck, 1818)**
(Figs. 9A–F, H–I, 10A–G)

Mactra papyracea Chemnitz, 1782 (*nomen nudum*), 6: pl.23, fig. 231.
Mactra papyracea Chemnitz, 1782. Gmelin, 1791: 3257.
Lutraria plicatella Lamarck, 1818: 470; Deshayes, 1835: 93; Hanley, 1842 in 1842–1856: 27; Lamy, 1913: 347.
Lutraria canaliculata Say, 1822: 311; Conrad, 1831: 46, pl. 10, fig. 1; De Kay, 1843: 232, pl. 31, fig. 298.
Mactra campechensis Gray, 1825: 134; Wood and Hanley, 1828: pl. 1, fig. 3.
Lutraria campechensis. Gray, 1837: 375.
Lavignon papyracea Gmelin. d'Orbigny, 1846 in 1834–1847: 527.
Raeta campechensis Gray, 1853: 43.
Mactra canaliculata. Reeve, 1854: pl. 21, fig. 122.
Raeta canaliculata. Adams and Adams, 1853–1858: 386, pl. 102, fig. 44a; Chenu 1862: 62, fig. 251; Carpenter, 1863: 368; Conrad, 1868: 41.
Lovellia canaliculata. Mayer, 1867: 37.
Raeta perspicua Hutton, 1873: 65.
Labiosa (*Raeta*) *canaliculata.* Dall, 1895: 212; 1894: 28; Vanatta, 1903, 55: 757; Mauri, 1920: 137.
Anatina canaliculata Say, 1822: Perry, 1940: 83, pl. 18, fig. 117.
Labiosa plicatella. Carcelles, 1944: 284, pl. 10, fig. 85; Barattini and Ureta, 1961: 170; Rios, 1966: 33; 1970: 197; Castellanos, 1970, 238, pl. 21, fig. 14–16; Figueiras and Broggi, 1972–1973: 221.
Raeta plicatella. Figueiras and Sicardi, 1969: 368, pl.4, fig. 57; Harry, 1969: 12, fig. 11–13; Altena, 1971: 54, pl. 5, fig. 4–6; Rios, 1975: 237, pl. 75, fig. 1136; 1985: 244, pl. 86, fig. 1217; 1994: 267, pl. 91, fig. 1300; 2009: 538, fig. 1494; Aguirre, 1989: 169 1991: 165; 1992: 39.

Description:

Shell. trigonal to ovoid, subequilateral, pellucid, inflated through the anterior portion, maximum size up to 75 mm length; external surface with diagnostic concentric strong wrinkles from umbones to ventral margin; anterodorsal and ventral margin rounded, posterior end rounded but more defined than the anterior; lunule and escutcheon not defined by a line or shelly ridge. Interior white with soft wrinkles that reveal the external ornamentation; deep pallial sinus with a length about 2/3 shell length; adductor muscle scar similar in size and shape, the anterior one more elongated dorso-ventrally.

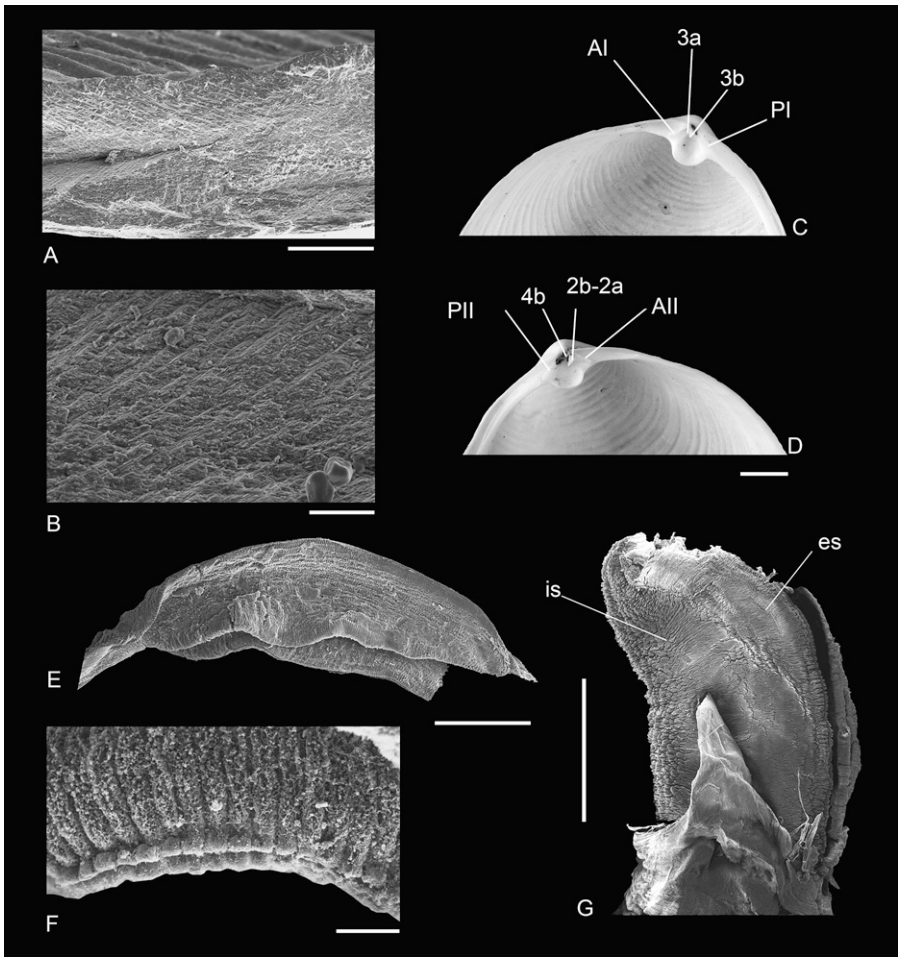

Figure 10. *Raeta plicatella*, **A–B**, shell ultrastructure, scale bar A = 200 μm, B = 20 μm; **C–D**, hinge detail of cardinal and lateral teeth, scale bar = 2 cm; **E–F**, SEM picture of ctenidia, scale bar = 1 mm; **F**, detail of food groove in the ventral edge, scale bar = 50 μm; **G**, SEM picture of siphons, scale bar 2 mm. Arabic numbers are used to designate cardinal teeth and Roman numbers lateral teeth (Cox in Moore 1969).

Right hinge with only one anterior and posterior lateral tooth and two cardinal teeth not fused; laterals very short and close to the cardinals; left hinge with the inverted V-shaped cardinal teeth closely flanked by the accessory lamella; one anterior and one posterior lateral tooth; resilifer very well developed (Figs. 10C–D). Ultrastructure of the shell with the same layers that other mactrids (Figs. 10A–B). MANTLE CAVITY ORGANS. Siphons completely fused, the inhalant bigger than the exhalant (Fig. 10G). Two demibranchs at both sides of the body dorsally fused to the mantle with an elongated morphology. The inner demibranch bigger than the outer with a food grove in the ventral edge (Figs. 10E–F); labial palps notoriously developed, trigonal, placed surrounding the mouth and fused dorsally with the visceral mass.

Type material: [*Raeta plicatella*] MNHN (unnumbered), two syntypes; [*Lutraria campechensis*] type material not found, not deposited in the NHMUK; [*L. canaliculata*] type material not housed in the ANSP; [*R. perspicua*] NMNZ 0321, holotype registered erroneously from Bay of Islands, New Zealand.

Type Locality: "*l´Indian Ocean*" is mentioned in the original description.

Other material examined: *United States of America*: Virginia (VA) (AMNH 310600); Hog Island, VA (USNM 27583); Fort Macon, North Carolina (NC) (USNM 407354); Beaufort, NC (MNRJ 1293; USNM 24585, 27587, 278117, 467425, 488236, 595610); Myrtle Beach, South Carolina (SC) (USNM 54360, 631769, 8077190); Charleston Bay, SC (USNM 27586, 103783, 462419, 462431); Folly Beach, SC (USNM 420530); Jekyll Island, Georgia (GA) (AMNH 309266; USNM 462417, 462432); St. Simons, GA (USNM 27582); St. Catherine Island, GA (AMNH 171652, 183311, 271933, 271988, 272059); St. Simons Island, GA (USNM 535380); Florida (AMNH 34007,113735, 115344, 172210, 248029; FURG 40204; USNM 43189, 54358, 54368, 60784, , 92113, 198442, 487332, 765899, 781697); St. Augustine, FL (USNM 462433); Mouth of Saint Johns River, FL (USNM 46847); Hillsboro inlet, FL (USNM 87640); Key West, FL (AMNH 2725749); Cape Romano, FL (USNM 150365, 533753); Marco Island, FL (AMNH 248031, 311464; USNM 614164); Bonita Springs, FL (AMNH 292618);Sanibel, FL (FURG 8584; MNRJ 1292; MZUSP 46885; NHMUK 2206; USNM 168853; AMNH 16108, 87075, 103278, 115346, 120440, 139099, 157821, 1 specimen, 179331, 181427, collected in 1972, 2 specimens, 203190, 203196, 243762, 265146, collected in 1973, 266856, 272575, 292617, 294018, 309280, 310617); Captiva, FL (AMNH 100057); Lee county, FL (USNM 53687); Mullet Key, FL (USNM 27585); Boca Ciega, FL (FURG 4574); Panama City, FL (USNM 18353, 466243, 518351); Alabama (AMNH 210004, 210308); Louisiana (USNM 177932, 189171); Texas (AMNH 177884; MNRJ 1291; USNM 126184, 6037; FURG 28056); Bolivar Point, TX (USNM 465337). Matagorda, TX (USNM 134379);

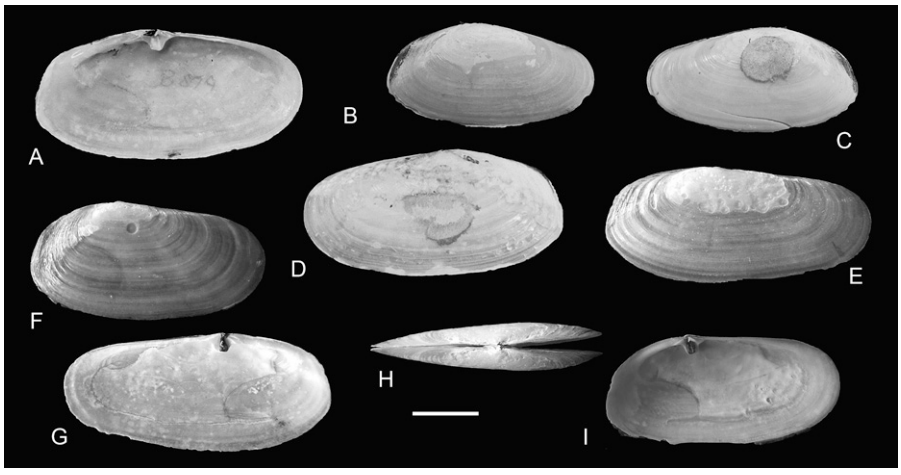

Figure 11. A–D, *Darina solenoides*, Syntypes NHMUK 1837.12.1.879/884; **E–I**, *Lutraria tenuis*; **F**, Holotype ZMB 112740; **E**, **G–I**, Paratypes ZMB 112741, scale bar = 1 cm.

Brazil. Maceió, AL (FURG 37482; MNRJ 4578); Espírito Santo (FURG 10203); Rio de Janeiro (MZUSP 45145); Búzios, RJ (FURG 20970); Ilha Grande, RJ (MZUSP 22421); São Paulo (MZUSP 13088, 22430, 45015, 45018, 45019, 45163, 45174, 77492, 80969, 84041); Guarujá, SP (MZUSP 15855); Ubatuba, SP (FURG 10558; MZUSP 22422, 22423, 22424, 22425, 22426, 22427, 22428, 22429, 22434, 22454, 45022, 45187, 46485, 82431); Santos, SP (USNM 359298; MZUSP 45189); Peruíbe, SP (MZUSP 22431, 45021); Bertioga, SP (MZUSP 22433); Iguape, SP (MZUSP 13089, 22432); Praia do Saí, PR (MZUSP 22435); Paranaguá, PR (FURG 5179); Porto Belo, SC (FURG 18121, 42978, 46584; MZUSP 36311); Santa Catarina (USNM 122498; FURG 50250; MZUSP 309); Camboriú, SC (FURG 31684); Florianópolis, SC (MZUSP 56993); Itapema, SC (MZUSP 16122); Cassino, RS (FURG 3449, 4155, 66). *Uruguay*. Chui (FURG 17548); La Coronilla, Uruguay (FURG 32644); La Paloma, Rocha (USNM 361685, 426418; AMNH 177972; FURG 9003, 9514, 19022, 24223); Rocha, Uruguay (USNM 362984). *Argentina*. Buenos Aires (FURG 46311); Villa Gessell (MLP 5375); Puerto Quequén, Argentina (USNM 381677); Monte Hermoso (MLP 2042).

Distribution:

From Hog Island, Virginia State, United States of America to Monte Hermoso, Argentina.

Remarks:

Lutraria canaliculata Say, 1822, is a synonym. Unfortunately the type material of this taxon was not found at the ANSP collection where most of Say´s material is deposited. In the original description Say did not illustrate this species. Later, this name is mentioned and illustrated in several publications (i. e. Conrad 1831, De Kay 1843, Adams and Adams 1853–1858, Reeve 1854, Chenu 1862, Perry 1940). After an analysis of the shell morphology of all those illustrations we conclude that *L. canaliculata* Say must be considered a synonym of *Raeta plicatella*. *Mactra campechensis* Gray, 1825 (Fig. 9F), based on the illustration of Lister (1770) from one specimen (Fig. 9H–I) collected in Campeche, Mexico, coincides with the morphology of *R. plicatella*, and therefore, is also considered a synonym.

The revision of the type material of *Raeta perspicua* Hutton, 1873 revealed it as synonymous with Lamarck's species. Hutton described it erroneously from New Zealand as previously mentioned Harry (1969). In the prologue of Hutton's publication it is mentioned that several specimens were donated by private collectors commonly labeled incorrectly. In addition, there is no mention of this species in several mollusk catalogues from Australia and New Zealand (Smith 1914, Kershaw 1958, Lamprell and Whitehead 1990, Kilburn and Hylleberg 1998, Taylor and Glover 2004).

Mactra papyracea Gmelin, 1791 is mentioned as a possible older name (Lamarck, 1818). This species was described originally by Chemnitz (1782, vol. 6, pl. 23, fig. 231), whose work was rejected by nomenclatorial reasons (ICZN 1944, 1954). The type material was not found in European malacological collections. If this synonymy is confirmed the valid name must be changed to *Raeta papyracea* (Gmelin, 1791). Unfortunately Chemnitz´s illustration is rudimentary (Fig. 9G). Only d'Orbigny (1846 in 1834–1847) mentioned the name introduced by Chemnitz into the genus *Lavignon* d'Orbigny 1845 in 1834–1847 (Fig. 9E). The specimens from d'Orbigny collection coincide with *R. plicatella* Lamarck.

Subfamily Darininae Signorelli in Carter *et al.* 2011.
Genus *Darina* Gray, 1853.

Type Species:

Erycina solenoides King, 1832: 335, by monotypy.

Diagnosis:

Shell fragile, thin, elongated, compressed laterally, yellowish periostracum; siphonal gap in both ends; small external ligament, internal ligament well-developed placed in a chondrophore; teeth weak, located in the cardinal area; pallial sinus deep.

Distribution:

From Bahía Blanca in Argentina to Puerto Mont in Chile.

***Darina solenoides* (King, 1832)** (Figs. 11A–I)

The full morphological characterization of this species was carried out in the revision of Magellanic mactrids (Signorelli and Pastorino 2011).

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